

GAO

United States General Accounting Office

Report to the Committee on Science,  
House of Representatives

May 1999

# NATIONAL LABORATORIES

## DOE Needs to Assess the Impact of Using Performance-Based Contracts



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United States  
General Accounting Office  
Washington, D.C. 20548

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Resources, Community, and  
Economic Development Division

B-282356

May 7, 1999

The Honorable F. James Sensenbrenner, Jr.  
Chairman  
The Honorable George E. Brown, Jr.  
Ranking Minority Member  
Committee on Science  
House of Representatives

The Department of Energy (DOE) contracts with private companies and educational institutions to manage and operate 18 of its 22 laboratories. These are cost reimbursement contracts under which DOE pays all of its contractors' allowable costs. DOE can also provide a fee, or profit, to a contractor for managing a laboratory. Responding to criticism that its historical contracting practices were costly and inefficient, DOE switched to performance-based contracts in 1994 as part of its contract reform program. Use of these contracts allows DOE to structure each contract to provide a clear statement of what needs to be accomplished—rather than providing broad statements of work—and to rely on performance measures to evaluate a contractor's progress toward meeting its objectives. An important feature of performance-based contracting is providing incentives, including fees, to the contractor's achievement of objectives as a means of encouraging superior performance and lowering costs. Concerned about the progress made to implement performance-based contracting at the national laboratories, you asked us to

- assess the status of performance-based contracting in DOE's national laboratory contracts, and
- identify efforts being made to determine the impact of performance-based contracting.

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## Results in Brief

DOE's use of performance-based contracting for its laboratories is in a state of transition. While all laboratory contracts we examined had some performance-based features, we found wide variance in the number of performance measures and the types of fees negotiated. About half of the 18 laboratory contracts have performance fees to encourage superior performance—a major goal of performance-based contracting. Most of the remaining laboratory contracts are still based on DOE's traditional fixed-fee arrangement in which the fees are paid regardless of performance.

DOE has not evaluated the impact of performance-based contracting on its laboratory contractors and, as a result, does not know if this new form of contracting is achieving the intended results of improved performance and lower costs. Specifically, DOE has not determined whether giving higher fees to encourage superior performance by its laboratory contractors is advantageous to the government, although we recommended in 1994 that DOE develop criteria for measuring the costs and benefits to the government of using higher fees.<sup>1</sup> Fees for the laboratories totaled over \$100 million for fiscal year 1998. While the contractors were unable to cite measurable benefits achieved by switching to performance-based contracting, they support its goals. The main benefits from performance-based contracting cited by laboratory contractors was that it has helped DOE clarify what it expects from the contractors and that it has improved communication.

## Background

DOE manages the largest laboratory system of its kind in the world. Since the early days of the World War II Manhattan Project, DOE's laboratories have played a major role in maintaining U.S. leadership in research and development. DOE is responsible for ensuring that the laboratory system—with 22 laboratories in 14 states, a combined budget of over \$10 billion a year, and a staff of about 60,000—is managed in an effective, efficient, and economical manner. DOE contracts with educational institutions and private sector organizations for the management and operation of 18 of its laboratories. (App. I lists DOE's national laboratories.) The remaining four laboratories are staffed by federal employees.

DOE pays its laboratory contractors all allowable costs. DOE can also pay contractors a separate fee, or profit, as compensation for operating the laboratories. Fees are based on the contract value and the technical complexity of the work to be performed at a laboratory, but also on the degree of financial liability or risk that a contractor is willing to assume. Under performance-based contracting principles, fees can include both a fixed amount and an amount that is linked to achieving performance objectives. One of DOE's major goals in performance-based contracting is to develop performance objectives for each contractor that are specific, results-oriented, measurable, and reflect the most critical activities.

<sup>1</sup>Energy Management: Modest Reforms Made in University of California Contracts, but Fees Are Substantially Higher (GAO/RCED-94-202, Aug. 25, 1994).

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## Performance-Based Contracting at the National Laboratories Is an Evolving Process

DOE's implementation of performance-based contracting for its laboratories is in a state of transition. While most of its laboratory contracts contain some performance-based features, the contracts negotiated by DOE vary from contract to contract. For example, DOE is incorporating performance-based features in all of its laboratory contracts, although measures vary substantially in number, ranging from a low of 7 in one laboratory contract to about 250 in another. Also, DOE has negotiated performance fees in only 9 of its 18 laboratory contracts because the remaining laboratories are still operating under DOE's traditional approach in which fees are not linked to performance. We found that similar laboratories managed by similar contractors have different contracts. The wide diversity of contract features reflects DOE's philosophy of relying on DOE field units to tailor contracts to local conditions and contractors' preferences.

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## Developing the Right Performance Measures Is a Challenge

Since introducing performance-based contracting in 1994, DOE and its laboratory contractors have struggled to find the right mix of measures that accurately and reliably capture the contractors' performance. According to DOE field staff, in the early years of contract reform, DOE encouraged its field units to construct as many measures as they could, but provided limited guidance on how to accomplish this task. As a result, early attempts led to large numbers of performance measures. A large number of measures diminishes the importance of any single measure, whereas a small number results in measures that are too broad to be meaningful. For example, a DOE field official told us,

"The original guidance from DOE Headquarters was to [develop performance measures] as much as possible. Unfortunately, there was inadequate guidance on how to do this. . . . The number of performance measures . . . is too large. However, if we fail to cover an activity [with a measure] the contractor may not give the attention needed to the activity."

DOE and its laboratories are still attempting to develop the right number of measures. For example, we found that the number of performance measures in the laboratory contracts we examined ranged from a low of 7 measures at the Ames Laboratory in Iowa to about 250 at the Idaho National Engineering and Environmental Laboratory in Idaho.

DOE and its contractors are also working to develop measures that reliably address the most important activities of the laboratories. According to a

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field official, DOE's early attempts at developing performance measures resulted in contractors focusing only on those activities that were tied to performance fees, while neglecting other important activities. Another DOE site official stated,

"[P]erformance-based contracting tends to focus too much on the monetary reward . . . and less on an analysis of performance. The incentive at the labs should be [for] good science, not more dollars."

Developing the right number and type of performance measures is an evolving process between DOE and its contractors. Most DOE and contractor representatives told us that they are making progress in finding measures that accurately and reliably reflect performance, particularly in management and operations activities. Measuring a contractor's performance in science and technology is more difficult. Science and technology measures are broader in scope and typically rely on peer reviews and a contractor's self-assessment for evaluating performance.

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### Types of Fees Paid to Contractors Vary Widely

Although performance fees are a major feature of performance-based contracting, only 9 of the Department's 18 laboratory contracts have them. Nine of the remaining laboratory contracts operate under DOE's traditional fixed-fee arrangement, and one laboratory contract has no fee. Fixed fees are earned regardless of performance and were commonly used before DOE adopted performance-based contracting as its normal business practice. Appendixes I and II summarize laboratory fee arrangements and illustrate the wide variety of fee arrangements in use. In commenting on a draft of this report, DOE said that by the end of calendar year 1999, the majority of laboratory contracts that provide fees will have performance-based fee structures.

Performance fees were introduced as a way of encouraging superior performance and can include an incentive and an award fee. An incentive fee is usually applied to activities for which progress can be accurately measured, for example, cleaning up 40 barrels of toxic waste within a prescribed period of time. An award fee is usually applied to tasks that are harder to measure and require a more subjective judgment of performance, for example, assessing a contractor's attention to community relations. Performance fees represent the amount of a contractor's total fee placed "at risk" since the fee that could be earned is determined by how well the contractor performs.

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As the following examples show, some laboratory contracts include both types of performance fees, while others rely solely on an incentive fee or an award fee. Still others have neither and use only fixed fees.

- At the Sandia National Laboratories in New Mexico and the Oak Ridge National Laboratory in Tennessee, DOE negotiated fixed-fee contracts. Both of these laboratories are operated by subsidiaries of the Lockheed Martin Corporation—a for-profit company. DOE officials told us they were confident that incentive fees were not needed for these laboratories because the existing Lockheed Martin contractors' performance is superior and introducing incentive fees might distract the contractors from performing all essential work.
- At the Idaho National Engineering and Environmental Laboratory in Idaho, operated by Lockheed Martin Idaho Technologies Company, DOE uses a combination of fixed, incentive, and award fees. DOE officials told us that incentive fees were used because of the many different tasks that could be identified and measured, but that award fees were also needed to assess activities that required more subjective judgments.
- At the Stanford Linear Accelerator Center in California, operated by Stanford University, DOE negotiated a no-fee contract, the only such arrangement in the laboratory system. According to DOE, the laboratory contractor does not want a fee for operating this laboratory because a fee would not motivate performance and may be a detriment to the conduct of outstanding science, which is the primary mission of this laboratory.
- The Lawrence Berkeley National Laboratory and Lawrence Livermore National Laboratory in California and the Los Alamos National Laboratory in New Mexico are operated by the University of California. The contracts contain a fixed fee and an incentive fee for meeting expectations, plus another amount for exceeding expectations.

A senior DOE official acknowledged the variability in laboratory contracts but said that imposing uniform practices throughout the laboratory system would not necessarily improve the overall performance and accountability of the contractors. According to DOE and laboratory officials, there are several reasons for the variability in the contracts. First, the laboratories engage in different activities with different levels of technical complexities. Second, some contractors are willing to assume greater financial risk or liability and thus expect a higher or different fee arrangement. Finally, DOE field officials who negotiate the contracts employ features that they believe are best suited for their particular circumstances. However, we found that similar laboratories operated by similar contractors have different fee arrangements. For example, both the

Lawrence Berkeley and Argonne national laboratories have similar research missions and are both managed by university contractors. However, Lawrence Berkeley's contractor, the University of California, works under a fixed-fee plus performance fee arrangement, while Argonne's contractor, the University of Chicago, works under a performance fee arrangement only.

We also found substantial variations in contracting philosophy among DOE field officials. DOE relies on field units to negotiate its contracts, including whether to use performance-based fees, and how performance objectives and measures will be accomplished. Some of these officials told us that performance fees are important motivators, while others said performance fees can distract the contractor from other important work.

In commenting on a draft of this report, DOE provided us with additional reasons for the variability in contracts, including the timing of when contractors first converted to performance-based contracting, the nature of the proposals received in competitive awards, and the negotiated terms in contract extensions. In addition, DOE cited other motivations for laboratory contractors, such as their reputations in the scientific community and contract extensions.

## The Impact of Performance-Based Contracting Remains Unknown

DOE's guidance states that the purpose of performance-based contracting is to obtain better performance or lower costs or both. DOE has not analyzed the impact of performance-based contracting on its laboratory contractors. As a result, it has not determined whether performance-based contracting is achieving the intended objectives of reducing costs and improving performance.

DOE officials told us that the amounts of fees paid to laboratory contractors have generally increased with the implementation of performance-based contracting but that it is difficult to determine the return on this investment since contractors are also assuming more risk or liability for costs previously paid by DOE. Increased liabilities include costs due to a failure to exercise prudent business judgment on the part of the contractor's managerial personnel. DOE has not analyzed the relative costs and benefits to the government of using higher fees in performance-based contracts. We previously recommended that DOE ensure that the fees paid to contractors for incurring increased financial risks are cost-effective by developing criteria for measuring the costs and benefits to the government

of this approach.<sup>2</sup> DOE officials told us that while they have not conducted a comprehensive cost-benefit analysis of fees, they try to negotiate fees that make sense for individual contracts, taking into account the financial risks and incentives needed to motivate performance. Without such an overall analysis, however, it is difficult to determine the value to the government of the over \$100 million spent on contractor fees for fiscal year 1998.

Although DOE has not assessed the impact of performance-based contracting, limited reviews have found both progress and problems, as these examples show:

- Since 1997, DOE's Office of Inspector General has issued three reports on problems the Department had in implementing performance-based incentives at three facilities (one of which was a laboratory).<sup>3</sup> Problems reported by the Inspector General included contracts with poorly developed performance measures and fees that were paid to contractors before agreement was reached on the performance incentives.
- In 1997, DOE's Office of Procurement issued a report on the use of performance-based incentives. The report noted that the use of incentives has been effective in directing contractors' attention to performance outcomes and has improved communications concerning performance expectations. The report also noted that DOE field units are improving the quality of their contracts. However, the report pointed out that implementation was sometimes inconsistent and that performance objectives sometimes were overly focused on process milestones rather than on outcomes. DOE's laboratories were not the focus of this review, however.<sup>4</sup>
- Our July 1998 report on DOE's performance-based incentive contracts noted that the Department had taken steps to correct many of the problems cited in the Inspector General's reports, including issuing guidance, conducting training, and incorporating lessons learned into fiscal year 1998 contract incentives.<sup>5</sup> We noted that although DOE

<sup>2</sup>GAO/RCED-94-202, Aug. 25, 1994.

<sup>3</sup>Inspection of the Performance Based Incentive Program at the Richland Operations Office (DOE/IG-0401, Mar. 10, 1997); Audit of the Contractor Incentive Programs at the Rocky Flats Environmental Technology Site (DOE/IG-0411, Aug. 13, 1997); and Inspection Report: The Fiscal Year 1996 Performance Based Incentive Program at the Savannah River Operations Office (DOE-INS-O-98-03, May 1998).

<sup>4</sup>Contract Reform Self Assessment Report, Office of Contract Reform and Privatization, DOE (Sept. 1997).

<sup>5</sup>Department of Energy: Lessons Learned Incorporated Into Performance-Based Incentive Contracts (GAO/RCED-98-223, July 15, 1998).

maintained that its performance-based incentives have been effective in achieving the desired end results, it had not been clear whether these successes were due to performance-based incentives or to an increased emphasis on program management.

None of these assessments focused exclusively on laboratory contracts. In our discussions, DOE field staff generally credited performance-based contracting with improving their ability to set expectations for the Department's laboratories, and several laboratory contractors concurred that this was a benefit. In addition, both DOE and laboratory officials cited improved communication as a benefit of performance-based contracting. Laboratory contractors also credited DOE for focusing its oversight on evaluating results and away from dwelling on strict compliance with DOE's rules and regulations. In addition, contractors told us they have increased productivity and lowered costs, especially for the support and overhead functions. However, most of these officials also said that these advances were more the result of other initiatives, such as internal streamlining actions, than of performance-based contracting.

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## Conclusions

DOE and its laboratory contractors told us that they are committed to making performance-based contracting work effectively and that the contracts are including more specific and reliable performance measures. However, since DOE has not evaluated the impact of performance-based contracting on its laboratories—owing in part to the wide variance in fee arrangements—there is limited evidence on how performance fees ensure a high level of performance by contractors at lower cost. As a result, DOE cannot show how the higher fees it is paying to contractors under performance-based contracting are of value to the government and to the taxpayers.

We previously recommended that the Secretary of Energy ensure that the fees paid to contractors for incurring increased financial risk are cost-effective by developing criteria for measuring the costs and benefits to the government of this approach. DOE did not implement our recommendation and has no plans to measure the overall costs and benefits of performance-based contracting for its laboratories. DOE officials maintain that performance-based contracting is working, but this is based on anecdotal evidence. Moreover, the fees DOE negotiates are based on its best judgment of what is needed to motivate contractors and to compensate them for increased risk, but DOE's evidence is based primarily on non-laboratory contractors, and DOE has not quantified the

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value of the increased risk assumed by contractors under performance-based conditions.

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## Recommendation

Because DOE does not know whether performance-based contracting is improving performance at lower cost at its national laboratories and because our previous recommendation to develop criteria for measuring the costs and benefits of paying fees to contractors for incurring increased financial risk was not implemented, we recommend that the Secretary of Energy evaluate the costs and benefits from using performance-based contracting at the national laboratories. While we recognize that each laboratory contract is individually negotiated, DOE should nevertheless ensure that the fees it provides to motivate contractors and to compensate them for increased financial risk is based on an analysis of costs and benefits. The need for this type of evaluation is consistent with the principles of the Government Performance and Results Act of 1993 that require agencies to measure outcomes against their goals.<sup>6</sup>

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## Agency Comments

We provided a draft of this report to DOE for review and comment. DOE disagreed with our conclusion on the need for determining the costs and benefits of the fees it has negotiated with its laboratory contractors. DOE noted that its performance-based contracting experience is in transition but that its evaluations show that performance-based contracting is working. We acknowledge in our report that DOE's evaluations of performance-based contracting show promise, but we also point out that these evaluations did not focus on the laboratories' experiences with performance-based contracting. Because of this limitation and because of the higher fees being negotiated with the laboratories, we continue to believe it is desirable for DOE to determine if its performance-based contracting is improving performance at lower cost.

DOE also commented that the variability we found in performance-based laboratory contracts reflects many different factors, including differences in the scope of work, the type of contractor, and the experiences the laboratories have with performance-based contracting features. Our report described the reasons for the variability in laboratory contracts, and we have included the additional reasons provided in DOE's comments. We also agree that DOE's use of performance-based contracting is evolving and that the variability we found in laboratory contracts (principally in

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<sup>6</sup>The Results Act applies to agencies as defined in 5 U.S.C. 306(f), which generally covers executive departments, government corporations, and independent establishments.

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performance measures and fee arrangements) is in part due to an ongoing learning process associated with the transition to performance-based contracting.

DOE also raised a number of issues regarding the use of fees in its laboratory contracts and strongly defended its use of performance fees. We agree with many of DOE's observations on the use of performance fees, and we are not suggesting that DOE should abandon its performance-based approach or that it should eliminate performance-based fees in its laboratory contracts. It is also not our intent to show that performance-based contracting should be abandoned if its impacts on the laboratories cannot be measured. We do believe, however, that effective implementation of performance-based contracting provisions is dependent on the ability to support the fee amounts paid through a cost and benefit analysis.

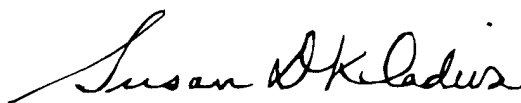
DOE also provided a number of clarifications that we have incorporated in our report as appropriate. Appendix III includes the full text of DOE's comments and our response.

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Our review was performed from September 1998 through April 1999 in accordance with generally accepted government auditing standards. See appendix IV for a description of our scope and methodology.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this letter. At that time, we will send copies to Bill Richardson, Secretary of Energy, and Jacob J. Lew, Director, Office of Management and Budget. We will make copies available to others on request.

If you or your staff have any questions about this report, please call me at (202) 512-3841. Major contributors to this report were Gary R. Boss and Tom Kingham.



Susan D. Kladiva  
Associate Director, Energy,  
Resources, and Science Issues



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## Abbreviations

|     |                           |
|-----|---------------------------|
| DOE | Department of Energy      |
| GAO | General Accounting Office |
| R&D | research and development  |



# Contract Amount and Fees Earned by DOE's Laboratory Contractors in Fiscal Year 1998

| Laboratory/contractor  | Contract amount<br>(millions) <sup>a</sup> | Fixed or base fee <sup>b</sup> | Performance fee <sup>c</sup> | Total fee earned       |
|--|--|--------------------------------|------------------------------|------------------------|
| Argonne National Laboratory/University of Chicago  | \$466.9                                    |                                | \$3,425,000                  | \$3,425,000            |
| Brookhaven National Laboratory/Brookhaven Science Associates                                       | 385.9                                      | 3,574,000                      |                              | 3,574,000              |
| Idaho National Engineering and Environmental Laboratory/Lockheed Martin Idaho Technologies Company | 578.7                                      |                                | 9,848,000                    | 9,848,000              |
| Lawrence Berkeley National Laboratory/University of California                                     | 320.0                                      | 420,000                        | 1,063,780                    | 1,483,780              |
| Lawrence Livermore National Laboratory/University of California                                    | 1,100.0                                    | 1,680,000                      | 4,482,000                    | 6,162,000              |
| Los Alamos National Laboratory/University of California  | 1,345.0                                    | 2,100,000                      | 5,550,000                    | 7,650,000              |
| Oak Ridge National Laboratory/Lockheed Martin Energy Research                                      | 475.6                                      | 7,220,000                      |                              | 7,220,000              |
| Pacific Northwest Laboratory/Battelle Memorial Institute   | 461.0                                      | 5,600,000                      |                              | 5,600,000              |
| Sandia National Laboratories/Sandia Corp. (Lockheed Martin)  | 1,397.6                                    | 14,347,000                     |                              | 14,347,000             |
| Ames Laboratory/Iowa State University  | 25.4                                       |                                | TBD <sup>d</sup>             | TBD <sup>d</sup>       |
| Fermi National Accelerator Laboratory/University Research Associates, Inc.                         | 279.6                                      | 2,750,000                      |                              | 2,750,000              |
| National Renewable Energy Laboratory/Midwest Research Institute                                    | 199.4                                      | 3,522,500                      | 3,522,500                    | 7,045,000              |
| Princeton Plasma Physics Laboratory/Princeton University   | 59.4                                       | 10,000                         |                              | 10,000                 |
| Stanford Linear Accelerator Center/Stanford University   | 187.0                                      |                                |                              |                        |
| Thomas Jefferson National Accelerator Facility/Southeastern University Research Associates, Inc.   | 70.2                                       | 1,874,633                      |                              | 1,874,633 <sup>e</sup> |
| Bettis Atomic Power Laboratory/Bechtel Group   | 305.1                                      | 8,686,000                      |                              | 8,686,000              |
| Knolls Atomic Power Laboratory/KAPL, Inc. (Lockheed Martin)  | 265.0                                      | 7,300,000                      |                              | 7,300,000              |
| Savannah River Technology Center/Westinghouse Savannah River Co.                                   | 1,248.0                                    |                                | 51,570,100                   | 51,570,100             |

(Table notes on next page)

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**Appendix I**  
**Contract Amount and Fees Earned by DOE's**  
**Laboratory Contractors in Fiscal Year 1998**

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<sup>a</sup>Contract amounts for fiscal year 1998 include some estimates.

<sup>b</sup>A base fee, used in a performance fee contract, is the part of the fee not at risk and is similar to a fixed fee.

<sup>c</sup>A performance fee can be either an award fee or an incentive fee or a combination.

<sup>d</sup>The fee is to be determined after DOE reviews of the contractor's self-assessment and after the issuance of final DOE reports.

<sup>e</sup>The fee is considered a management allowance, which is similar to a fixed fee.

<sup>f</sup>The contract and fee amounts shown are for the entire Savannah River Site, including the Savannah River Technology Center.

Source: GAO based on data from DOE's headquarters and operations offices.

# Status of DOE Laboratory Contracts as of March 30, 1999

| Laboratory/contractor  | Type and status of contract   |
|--|---|
| Argonne National Laboratory/University of Chicago  | Incentive-fee contract. DOE plans to extend this contract 5 years, but is renegotiating to make it consistent with the federal acquisition regulations format and to incorporate all contract reform features, including performance-based provisions.  |
| Brookhaven National Laboratory/Brookhaven Science Associates                                       | Fixed-fee contract. The new contract was signed in January 1998 with a fixed fee through September 1998. DOE is still negotiating the contract for fiscal year 1999. DOE plans to negotiate a performance fee.  |
| Idaho National Engineering and Environmental Laboratory/Lockheed Martin Idaho Technologies Company | Incentive-fee contract. DOE plans to recompute this contract in fiscal year 1999. The current contractor, Lockheed Martin, announced it will not bid.   |
| Lawrence Berkeley National Laboratory/University of California                                     | Incentive-fee contract. The amount of the annual available fee remains the same for each year of the 5-year contract.   |
| Lawrence Livermore National Laboratory/University of California                                    | Incentive-fee contract. The amount of the annual available fee remains the same for each year of the 5-year contract.   |
| Los Alamos National Laboratory/University of California  | Incentive-fee contract. The amount of the annual available fee remains the same for each year of the 5-year contract.   |
| Oak Ridge National Laboratory/Lockheed Martin Energy Research                                      | Fixed-fee contract. DOE is recompeting this contract. DOE plans to convert this contract to a performance fee. Lockheed-Martin announced that it will not bid as a prime contractor on the new contract. The other two contracts for this site—for environmental cleanup and production—are performance-fee.                              |
| Pacific Northwest Laboratory/Battelle Memorial Institute   | Incentive-fee contract. DOE converted this contract from a fixed-fee to an incentive-fee type and made available \$7.1 million in potential fees geared to incentives in four areas—science and technology excellence, operational excellence, leadership and management, and community relations.  |
| Sandia National Laboratories/Sandia Corp. (Lockheed Martin)  | Fixed-fee contract. The contract that expired in September 1998 was renegotiated and extended noncompetitively for 5 years. The new contract remains a fixed-fee arrangement but now includes performance objectives, measures, and criteria. DOE decided that the contractor's superior performance could be sustained with a fixed fee. |
| Ames Laboratory/Iowa State University  | Incentive-fee contract. DOE is renegotiating this contract and plans to extend noncompetitively for 5 years. DOE plans to make the contract consistent with the federal acquisition regulations format and to incorporate all contract reform conditions, including performance-based provisions.   |
| Fermi National Accelerator Laboratory/University Research Associates, Inc.                         | Fixed-fee contract. DOE has not announced whether it will recompute or extend this contract. DOE rates the contractor's performance as outstanding.   |
| National Renewable Energy/Midwest Research Institute   | Award-fee contract. DOE recompeted this contract in 1998. The new contract was effective on Oct. 1, 1998, and is fixed fee until March 1999, at which time DOE intends to include an award fee for the remainder of the contract period.  |
| Princeton Plasma Physics Laboratory/Princeton University   | Fixed-fee contract. The contractor did not want any fee, but DOE negotiated a small fee of \$10,000.  |

(continued)

**Appendix II  
Status of DOE Laboratory Contracts as of  
March 30, 1999**

| Laboratory/contractor   | Type and status of contract   |
|---|---|
| Stanford Linear Accelerator Center/Stanford University  | No-fee contract. The contract term ended on March 31, 1998, and was extended noncompetitively on a month-by-month basis during negotiations to incorporate performance-based incentives. The contract was then extended noncompetitively for 5 years in January 1999. The contract includes performance measures and expectations, but no fee.  |
| Thomas Jefferson National Accelerator Facility/Southeastern University Research Associates, Inc | No fee contract (with management allowance). The contract is currently being renegotiated so that it can be extended noncompetitively for 5 years. DOE plans the new contract to be a fixed-fee arrangement. Objectives of the negotiations are to structure the contract to be consistent with the federal acquisition regulations format and to incorporate all contract reform conditions, including performance-based features. |
| Bettis Atomic Power Laboratory/Bechtel Group  | Fixed-fee contract. The contract was recompeted in 1998. The new contractor was selected (the Bechtel Group) but the incumbent contractor, Westinghouse Electric Corporation, protested the award. The existing contract extended non-competitively pending the result of a bid protest to GAO. The bid protest was denied by GAO. The new contract with Bechtel was effective February 1, 1999.                                    |
| Knolls Atomic Power Laboratory/KAPL, Inc. (Lockheed Martin)                                     | Fixed-fee contract.   |
| Savannah River Technology Center/Westinghouse Savannah River Co.                                | Incentive-fee contract.   |

Source: GAO based on data from DOE's operations offices.

# Comments From the Department of Energy

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

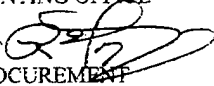


## Department of Energy

Washington, DC 20585

April 22, 1999

MEMORANDUM FOR      SUSAN D. KLADIVA  
ASSOCIATE DIRECTOR FOR ENERGY  
RESOURCES, AND SCIENCE ISSUES  
GENERAL ACCOUNTING OFFICE

FROM:                      RICHARD H. HOPF   
DIRECTOR OF PROCUREMENT  
AND ASSISTANCE MANAGEMENT

SUBJECT:                  RESPONSE TO DRAFT REPORT ENTITLED, "NATIONAL  
LABORATORIES: DOE NEEDS TO ASSESS THE IMPACT OF  
USING PERFORMANCE-BASED CONTRACTS"

Thank you for the opportunity to review your draft report on "issues relating to performance-based contracting in the national laboratories." We appreciate the difficulties in providing an assessment of this recent initiative as well as the complexity associated with consideration of such disparate contracts. However, we believe that the draft could be significantly improved by 1) correcting certain misimpressions, 2) providing greater context to certain observations 3) clarifying the occasional innuendo, and 4) providing greater recognition of the Department's regulations relating to fee.

Our comments are rather brief given the short time available for review. We would be glad to expand upon them at your convenience.

COMMENTS ON DRAFT GAO REPORT  
GAO/RCED-99-141

1. Page 1, ¶ 1.

a) The report states that in response to certain criticisms DOE switch to performance-based contracts in 1994. A more accurate statement would be that in 1994 DOE proposed and adopted a series of changes to its management and operating contracts. The initiative was based on a sense that, consistent with government "reinvention" themes, these contracts could be improved and was supported by input from a broad range of sources within and without the Department. One of the many changes pursued was the concept of applying performance-based contracting techniques.

b) The report states that "[T]hese contracts require DOE to provide a clear picture . . ." The contracts don't require this. It would be more accurate to state that the concept of a performance-based management contract includes the use of clearly stated performance objectives and measures ...."

c) The report states that "an important feature of performance-based contracts is linking fees . . ." It would be more accurate to state that "an important element of performance-based contracting is providing incentives for contractors to . . . Linking available fees to the achievement of performance objectives is an obvious and potentially effective example of such an incentive."

2. Page 2, ¶ 1.

a) The report states that "about half of the 19 laboratory contracts have performance fees to encourage superior performance - a major goal of performance-based contracting." A more accurate statement would be that by the end of the calendar year FY 99 of the majority of laboratory contracts that provide fee will have performance-based fee structures. The remaining contracts are fixed-fee arrangements.

3. Page 2, ¶ 2.

a) It is not accurate to state that "DOE has not evaluated the impact of performance-based contracting." There have, in fact, been a number of such evaluations.

b) It is inapt to state that "DOE" has not determined whether giving higher fee to encourage superior performance is advantageous . . ." The provision of fee is appropriate for a number of purposes, not just to obtain "superior performance." For example, one of the purposes of fee under a cost-reimbursement contract is to recognize financial risk associated with work performance. Such risks were, as a product of DOE's contract reform effort, broadened for contractors managing DOE labs. Another purpose is to recognize the accomplishment of contract objectives, regardless of adjectival description. Further, the reference to the 1994 GAO

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recommendation is inapt - it was associated not with performance fees, but rather with increased financial risk. Ironically, DOE has increased performance and financial risk under these contracts based on various recommendations, including those of the GAO, that they be brought more in line with other Federal contracts. However, it would appear that GAO now, by innuendo, criticizes the consequences of such changes. Further, the reference to increased fees is in large part, confused with other initiatives having little to do with performance-based concepts. Finally, given the admitted inability of the GAO auditors to suggest an appropriate cost-benefit model, as well as the absence of such model as applied to any other Federal fee scheme we question the realism of the recommendation.

c) Suggest that the reference to laboratory fees in fiscal year 1998 be put in context: "this amount represents less than \_\_\_% of the total value of laboratory contracts, making them among the lowest provided by any Federal agency.

See comment 5.

**Page 3, ¶ 3.**

The report notes that "the type of contract varies from contractor to contractor". The statement is inaccurate. The contract "type" for DOE management and operating contracts is fairly standard. Further, to the extent that there are variations they are "from contract to contract" not "contractor to contractor." The variations that the report appears to refer to relate to the number of performance objectives measures and the use of various fee approaches. There appears to be an implied criticism of the variation notwithstanding the recognition that DOE is in a transition state, and the absence of any analysis of why the variation exists. Neither does the report consider the variation in broader context. There are a number of reasons for the differences. They include: 1) significant differences in the scope, magnitude, and complexity of site work activities; 2) the timing of the contract structuring (contracts awarded shortly after the adoption of Contract Reform recommendations are different than recently awarded contracts where lessons learned and more seasoned, sophisticated approaches have been applied or recent policies have been adopted; 3) the nature of the proposals received in competitive awards and the negotiated terms in contract extensions; 4) variations in the status of the contracting party (e.g. profit, not-profit, educational institutions.)

See comment 6.

**Page 4, ¶ 1.**

The conclusion that contract differences are the product of "DOE's philosophy of relying on DOE field units to tailor contracts to local conditions and contractor preferences" is a rather odd and unsupported statement. DOE relies on its field organizations to negotiate and award contracts associated with their assigned responsibilities. So does virtually every Federal organization. They are, however subjected to headquarters

Now on p. 6.  
See comment 7.

review. Our respective contracts do reflect "local conditions" such as the specific work to be performed at a site. Contractor "preferences" are generally irrelevant except to the extent that they are reflected in competitive proposals or become contract negotiation issues. This is no different than any other Federal or commercial contracting environment. In any event, the variation noted by GAO is more accurately reflective of the factors previously noted.

Page 4, ¶ 2.

a) GAO notes that DOE has "struggled" to find the right mix of performance measures. DOE is, admittedly, still "growing" in its use of performance measures and objectives. It would, however, be helpful for GAO to officially observe what its staff has readily admitted: the development of an "optimum" set of performance measures in any environment is a difficult challenge, and perhaps an impractical objective. Major corporations have "struggled" with performance measures since the mid 1980s and still freely admit that they are not satisfied. Federal attempts at creating such measures for its programs have likewise struggled since the early 1990s. GAO itself has not found the subject matter easy and has recognized the difficulties associated with any nascent concept. Its own lack of expertise in this area is reflected in the fact that it has hired consultants to advise it on the subject and that it has used other organizations, including DOE, for benchmarking purposes.

b) The report correctly notes that in its initial application of performance objectives and measures DOE contracts had a tendency to identify a relatively large number of measures. Notwithstanding the quote from an unidentified "field official", there was in fact no headquarters direction to create "large numbers of performance measures." There was, however, a great deal of management emphasis placed on moving to defined performance objectives and criteria. Overdoing the number of measures is a rather natural tendency in any organization initiating a move towards performance management. It is largely reflective of both a general fear of leaving something important out and a desire to satisfy all stakeholder interests. Interestingly, it is a tendency that is frequently exacerbated by oversight bodies which frequently recommend that every perceived deficiency be addressed with a specific performance standard and measure. Although well meaning, these tendencies are counterproductive to effective performance management. The guidance that has been issued by DOE on this subject has pointed this out and as a consequence there has been a general effort to identify the "critical few." It is noteworthy that GAO had a similar learning experience with this concept in its early consideration of performance measurement and has only recently recognized that in this

See comment 8.

case more is not necessarily better.

**Page 5, ¶ 1.**

a) The report notes that DOE is still attempting to develop the "right number of measures" and notes that the contract for the management of Ames Laboratory has 7 while that for the Idaho National Engineering and Environmental Laboratory (INEEL) has 250. There is in fact no "right" number of measures for contracts for the management of DOE laboratories and it is unlikely that there ever will be. A careful analysis of the contract work scope of Ames versus the activities performed at INEEL might offer some insight as to why these contracts are ever likely to have the same or the same number of performance measures.

b) The report notes that DOE and its contractors are working to develop measures that reliably address the most important activities at the lab. This is entirely accurate. In fact, based on the comments of a private analyst who assessed performance management in a scientific/research and development environment, DOE may be the only agency aggressively pursuing the subject matter.

c) The report repeats a comment from an unidentified field official that "early attempts" at performance measures resulted in contractors focusing on what was measured and incentivized at the risk of neglecting that which was not. It is unclear what significance GAO intends the reader to draw from this unremarkable and fairly inane comment. This is, in fact, the whole point of measurement and incentivization. Is the alternative to not define expectations, not measure critical performance indicators, and not provide some consequence for the result? Is the alternative to establish contractual performance objectives and objectives for every conceivable work activity? If GAO's point is to inform the reader that effective performance measurement is an evolving process, we wholeheartedly agree. The comment, however, seems inapt for this purpose. Equally inane is the commenter's statement that performance-based contracting focuses on monetary reward not good science. The statement is also incorrect. If the commenter is observing that some contractors are motivated by financial reward, then it is rather obvious that linking such rewards to performance may be a useful idea. If the commenter is observing that some contractors are motivated by non-monetary rewards, then it is rather obvious that linking such rewards to performance may be a useful idea. It is for these reasons that DOE policy does not require laboratory contractors to accept fee and that DOE believes that there is value in defining performing expectations and measuring results even where fee is not available or has otherwise not been associated with targeted achievements. Other motivations, such as reputation in the

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scientific community, the ability to earn extended contract performance under options, and the ability to receive new contract awards or expanded assignments have been applied by the Department.

Now on p. 4.  
See comment 10.

**Page 6, ¶ 1.** a) The report notes a snapshot observation that fee arrangements vary among the laboratory contracts and that 9 out of 19 have fee at performance risk. This statement is not particularly accurate or informative of the current status. DOE has 18 contractor managed laboratories, not 19 (ORISE is no longer designated a DOE laboratory and has been dropped from the M&O system), 16 of those contracts provide fee to the contractor (SLAC and Princeton contain no or a nominal fee respectively); of those 16, 10 contracts currently contain performance fee requirements; and 1 is currently being competed with a performance fee. Of the 5 remaining contracts, 1 was competitively awarded in 1992 as a fixed fee contract and its full term has not expired (it will be competed with fee linked to performance upon completion of the term), and 2 are Naval Reactors laboratories jointly managed by statutory direction with the Department of the Navy which desires to maintain a fixed-fee. As previously noted to the auditors this "snapshot" of current status reflects the Department's policy preference for performance-linked fee structures and the migration to such structures as appropriate opportunities (contract termination) for change arise. Rather than concluding that fee approaches "vary widely", a more correct observation would be that DOE is systematically introducing performance-linked fees into its laboratory contracts. By the end of FY 99 the vast majority of those contracts containing other than nominal fee will link fee to performance.

Now on p. 4.  
See comment 11.

**Page 6, ¶ 2.** a) The report states that "performance fees were introduced as a way of encouraging superior performance." The wording here is not entirely accurate. Performance fees were introduced in order to link performance to financial reward, as opposed to fixed fees which simply compensate work effort.

Now on pp. 5 and 6.  
See comment 12.

**Page 7 & 8.** The discussion on these pages highlights the vagaries of fee arrangements. The report does not fully explain why variation exists. First, it should be noted that DOE policy treats companies organized for profit differently than nonprofit organizations in certain respects. Among the policy, the policy distinctions, reflected in the so-called variation, is the availability of some portion of the fee amount as a base fee. DOE generally will not provide base fee for for profits, but will consider doing so for nonprofit organizations in order to provide financial risk pools not otherwise available. Secondly, the work activity at DOE laboratory sites is in many cases dramatically different. Specifically, one site may be engaged almost entirely in basic scientific research; another may be focused on applied research with emphasis on introducing the results into the industrial market place; a third may be engaged in extensive effort to remediate legacy environmental and health hazards; a fourth may be concentrating on the technical aspects of weapons

systems management; a fifth may have an extensive facility construction program; a sixth may have all the above. In short, DOE laboratories do not come out of a cookie cutter and the appropriateness and utility of award fee and incentive fee arrangements may differ significantly. Finally, there is the impact of competitive proposals and the contract negotiation process. To put GAO's observation in broader context it is noteworthy that variation in fee approaches is not an abnormality in government contracts generally, and certainly not in laboratory and research and development contracts. Our review of other agencies' contracts for these purposes indicates a broad array of approaches throughout the government and within individual agencies. It would appear that no single approach has proven to be the optimum template for such contracts.

Now on p. 6.  
See comment 13.

**Page 9, ¶ 1.** The report contains a statement that it is DOE policy that the purpose of performance-based contracting is to obtain better performance and if these results are not achieved it isn't worth doing. Actually, the statement is not DOE policy, but rather is taken from a forward in a guide. The forward was written by someone outside the Department. Further we note that GAO failed to quote the entirety of his statement which indicated that there was no procurement where it cannot be successful. The report then notes that DOE has not analyzed the impact of performance-based contracts on its laboratories, with the implication that it may not be worth doing. DOE has in fact performed a number of assessments of the concept, even at this early stage of application, and has concluded that it is having a positive impact. Although, it is unlikely that in the future we will identify some scientifically conclusive mechanism to confirm or deny these early assessments, it would appear intuitively obvious that defining performance expectations and measuring results is an effective management tool. It could also appear intuitively obvious that measurement without consequence or reaction is an imperfect approach. We assume, for example, that after years of GPRA implementation without the conduct of any merit assessment, GAO still believes that the concept is valid and worthy of continued implementation. The GAO discussion in this regard appears to focus on the question of whether higher contract fees are a worthwhile consequence of performance focus. In part, this discussion is confused by other DOE actions with respect to 1) the elimination of the concept of a management allowance for nonprofit laboratory contractors, 2) the upgrading of DOE fee schedules to take into account years of inflation, and 3) the introduction of greater financial risk into management and operating contracts generally and with respect to laboratory contracts in particular. In any event, government-wide profit policies generally recognize that potential fee at risk instruments is greater than that associated with fixed fee instruments. This is also rather intuitive.

Now on p. 8.  
See comment 14.

**Page 10, ¶ 1.** a) The report states that without an overall cost benefit analysis it is difficult to determine the value of \$100 million spent on contractor fees for 1998. We are not aware of any model that has been developed or used by any agency for such an

assessment, and as far as we could determine from GAO auditors, neither has GAO. Neither has GAO offered any meaningful advice on how to construct such a model. Further, there appears to be an implication that absent such analysis fee should not be paid for our contracts. Such a conclusion would quickly resolve any issues, because it is unlikely that future contracts would ever be awarded.

It is also worthwhile to put the total fee amount for the subject contracts in perspective: 1) A number of the contracts reviewed by GAO are for a scope of operations that go far beyond typical laboratory contracts (e.g. INEEL and the Savannah River Site.) These contracts account for a significant portion of total fee noted by GAO; 2) The typical fee paid to laboratory contractors is among the lowest paid under any government contract, ranging from 0% to .02% to .06% to 1.8% of the contract cost base; 3) A number of the arrangements limit the use of fee earned to laboratory related scientific research and financial risk pools; and 4) The applications of performance-based concepts has resulted in greatly reduced fee earnings in contracts where performance has not met expectations. As a consequence, fee pay outs have been reduced for sub-optimal performance by up to 100%.

**General**

a) The report could be improved by greater reference to the concepts articulated in DOE's regulation on fee.

b) There are a number of data inaccuracies in the report attachments. We will be happy to provide corrected information at GAO's convenience.

See comment 1.

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## GAO Comments

The following are GAO's comments on the Department of Energy's letter dated April 22, 1999.

1. We have made changes to the report as appropriate in response to DOE's comments.
2. Our wording is drawn from DOE's guidance on performance-based contracting, and we have made changes to our report to reflect DOE's comments. DOE recommends that its laboratory contracts contain performance-based features, which include clear expectations described in terms of results, not how the work is to be accomplished.
3. As we stated in our report, DOE's evaluations did not focus on the laboratory contractors, nor did these evaluations focus on the costs and benefits of performance-based contracting features, including the impact of fees.
4. We recognize that one of the purposes of providing fees is to reflect the financial risk associated with work performance, and we make this point in our report. Our 1994 recommendation questioned the cost-benefit of the increased fees, regardless of whether they were related to performance or financial risk. We continue to believe that our recommendation is relevant because DOE has not evaluated the cost and benefit of the fees it is providing to laboratory contractors.
5. We believe our wording adequately reflects the conditions discussed. Information on the laboratory fees and total contract costs is presented in appendix I.
6. We have made changes to the report as appropriate in response to DOE's comments on contract type. We stated in our report that DOE's performance-based contracting is in a state of transition. We also stated that there are wide variations in performance measures and fee arrangements negotiated by DOE and its laboratory contractors. This material is presented as facts describing the conditions that presently exist. Our report also describes the reasons for the variability in laboratory contracts and includes most of the reasons given in DOE's comments. We have made changes in the report to reflect these additional reasons for the variability in DOE's laboratory contracts.
7. Our statement that contract differences are the product of DOE's relying on its field units to tailor contracts to local conditions is based on

interviews with numerous DOE field officials. This statement is not an implied criticism of how DOE negotiates contracts. Also, we disagree with DOE's characterization that contractors' preferences are "generally irrelevant" when accounting for the variations that exist among laboratory contractors. As DOE noted, contractors' preferences are reflected in the negotiation process. In our discussions with DOE field officials responsible for negotiating contracts, laboratory contractors' preferences on fees were cited as a critical factor in determining fee structures.

8. Our report recognizes that developing the optimum number of performance measures is a challenge, as reflected in the wide range of performance measures in use even among similar laboratories. We are not suggesting that any two contractors should have the same measures or the same number of measures. Our point is that DOE continues to struggle with finding the right number of measures. To further illustrate, the University of California's fiscal year 1998 contracts for its two weapons laboratories—Lawrence Livermore and Los Alamos—contain 83 and 120 performance measures, respectively, even though these laboratories are very similar in budget and scope. They are, however, managed by different DOE field units.

9. Our purpose in including comments we received from DOE field units is to illustrate the wide differences in philosophy about the use of fees to motivate laboratory contractors. Several DOE field staff, as well as contractors, told us that they strongly believe that providing fees does not motivate contractors, including both for-profit and not-for-profit contractors. Moreover, our statement that performance-based contracting has tended to focus in some instances on monetary rewards at the expense of good science was a frequent comment from both DOE field officials and laboratory contractors. Thus, it is very important to identify the need for monetary incentives where they are appropriate. Other motivations that DOE cited for laboratory contractors, such as their reputations in the scientific community and desire for contract extensions, were added to our report. These differences in philosophy account for some of the variation in contracts.

10. Our report reflects information provided directly from DOE field staff, who we were advised by DOE headquarters were the proper source for this information. The data in DOE's comments are reflected in the appendixes to our report. We have also revised our report to show that there are now 18 laboratory contractors, reflecting a recent change in how DOE defines its laboratories.

11. DOE field officials told us that performance fees are used to encourage superior performance. Asserting that fees are used to link performance to financial reward is self-evident in this context.

12. We agree with DOE that no single approach in contracting has proven to be optimum, and we reflected this view in our report. Regarding the wide variability in fee arrangements, we stated that there was very little consistency among the contracts of similar laboratory contractors conducting similar work. We also stated that local conditions influence the variability in laboratory contracts.

13. Our wording was taken from DOE's guidance on performance-based contracting. As we state in our report, prior assessments of performance-based contracting have not focused on laboratory contractors. We also stated in our report that DOE believes that the results from its assessments of performance-based contracting have been positive. We believe it is a logical and desirable step for DOE to determine whether performance-based contracting is improving performance at lower cost in its national laboratories. Also, we are not suggesting that DOE should abandon its performance-based approach or that it should eliminate performance-based fees in its laboratory contracts. It is also not our intent to show that performance-based contracting should be abandoned if its impacts on the laboratories cannot be measured. We believe that effective implementation of performance-based contracting provisions is dependent on the ability to support the fee amounts paid through a cost and benefit analysis. While it may appear intuitively obvious that defining performance expectations and measuring results are effective management tools, it is not intuitively obvious that the government is receiving a reasonable return on its investments in fee amounts for laboratory contractors. Likewise, while DOE commented that increases in fees reflect, in part, the increased financial risks being borne by contractors, no cost-benefit analysis quantifying this increased financial risk has been completed; thus it is not possible to determine if the proper level of fee is appropriate for the risk assumed.

14. We recognize that laboratory contractor fees are relatively small percentages of the total contract amounts. However, these percentages, which translated into \$100 million in fees for fiscal year 1998, must be considered in light of the fact that DOE's laboratories are government owned and that a laboratory contractor's financial risk is limited.

# Scope and Methodology

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To obtain information on the national laboratories' contracts, we interviewed officials from the following laboratories: Sandia National Laboratories and Los Alamos National Laboratory in New Mexico; Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory, and the Stanford Linear Accelerator in California; the National Renewable Energy Laboratory in Colorado; the Idaho National Engineering and Environmental Laboratory in Idaho; the Oak Ridge National Laboratory in Tennessee; and the Argonne National Laboratory in Illinois. We also spoke with laboratory officials in other locations to obtain cost and status information. We asked officials at these laboratories to comment on the impact of performance-based contracting on their operations.

We also interviewed Department of Energy (DOE) officials responsible for overseeing these laboratories. These officials were from DOE's operations offices in Albuquerque, New Mexico; Oakland, California; Oak Ridge, Tennessee; and Chicago, Illinois. We also interviewed DOE area and site office staff located at each of the operations offices we visited. To obtain a broader perspective, we interviewed DOE headquarters officials responsible for developing contracting policy.

We conducted our review from September 1998 through April 1999 in accordance with generally accepted government auditing standards.

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